REMARKS

Reconsideration and allowance of the subject application are respectfully requested. Claims 1-38 are all the claims pending in the application. Applicant respectfully submits that the pending claims define patentable subject matter.

Claim Objections

Claim 8 is objected to because of the following informality: it should state "said first density measuring means". Applicant has made the correction to claim 8, and accordingly, the claim objection should be withdrawn.

Claim Rejections - 35 USC § 102

A. Claims 1-3, 6, 11, 12, 27, 28, 31, and 36 stand rejected under 35 U.S.C. 102(e) as allegedly being anticipated by Suzuki et al. Patent 6,547,361. Applicant respectfully traverses the 35 U.S.C. 102 rejection as set forth below.

In col. 1, Suzuki notes the problems associated with serial printing and goes on to state that multi-scanning (Figs. 3A and 3B) addresses some of these problems (cols. 1, 2, and 3). The invention in Suzuki is directed toward multi-scanning in which the nozzles are divided into two or more portions and recording is performed separately for each portion, as shown in Figs. 3A and 3B.

However, the explicit language of claim 1 recites a serial printing method for recording an image. One skilled in the art understands that serial printing and multi-scanning are different. Moreover, the Examiner fails to identify Suzuki as teaching a serial printing method for

recording an image. Consequently, Suzuki fails to teach or suggest the serial printing method as recited in claim 1.

For at least the forgoing reasons, claim 1 is not anticipated or rendered obvious by the teaching of Suzuki. For similar reasons, independent claims 7, 8, 11, 16, 22, and 24 are patentable over the teaching of Suzuki.

Further, regarding claims 7, 8, 16 and 19, Suzuki also fails to teach or suggest measuring a density. Suzuki monitors the recorded image and calculates a density from recorded dots of the inputted image. However, Suzuki fails to teach or suggest obtaining a measured density.

Therefore, the 35 U.S.C. 102 rejection of claims 1-3, 6, 11, 12, 27, 28, 31, and 36 should be withdrawn.

Claim Rejections - 35 USC § 103

B. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. Patent 6,547,361 as applied to claim 1 above, and further in view of Aosaki et al. Patent 5,467,198.

For the reasons discussed above, claim 4 is patentable by virtue of its dependency from claim 1. Aosaki does not compensate for the deficiencies of claim 1.

Further, Suzuki relates to a jetting printer and relates to ejection defects, such as clogging. Such defects would not occur in a thermosensitive printer of Aosaki and thus the nature of the problems to be addressed is distinctive. Though the Examiner characterizes Suzuki as a generic printer, it is directed to an ink jet printer.

For at least the foregoing reasons, claim 4 is not anticipated or rendered obvious by the individual or combined teachings of Suzuki and Aosaki. Therefore, the 35 U.S.C. rejection of claim 4 should be withdrawn.

C. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. Patent 6,547,361 as applied to claim 1 above, and further in view of Saito Patent 4,561,789.

For the reasons discussed above, claim 5 is patentable by virtue of its dependency from claim 1. Saito does not compensate for the deficiencies of claim 1.

Additionally, Suzuki relates to a jetting printer with defects relating to ink ejection. However, Saito is directed to a thermal ink transfer printing system that docs not address such problems.

For at least the foregoing reasons, claim 5 is not anticipated or rendered obvious by the individual or combined teachings of Suzuki and Saito. Therefore, the 35 U.S.C 103 rejection of claim 5 should be withdrawn.

D. Claims 7-10, 29, 30, and 37 stand rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Suzuki et al. Patent 6,547,361, and further in view of Noyes et al Patent 6,775,022.

With respect to independent claims 7 and 8, the Examiner maintains that Suzuki teaches (col. 24, lines 16-22) a record correcting means for performing correction recording relative to the defective portion having said density difference, said record correcting means reciprocating said carriage again for the defective portion and driving said recording head in accordance with said density difference during the forward movement of said carriage.

However, Suzuki states that "when one-line recording is terminated and the carriage 609 is on its way **[backward movement]** to its home position, the aforesaid linear pulse motor 644 is driven to modify the vertical position of the recording head thereby to perform a correction recording from the different discharging ports... (col. 23, lines 56-60)." Also, Suzuki states "while the recording head is being returned home **[backward movement]**...the correction recording will be performed (col. 24, lines 39-41)." In Suzuki, correction recording is not performed during forward movement of the recording head, but during backward movement of the recording.

For at least the foregoing reasons, Suzuki fails to teach or suggest that said record correcting means reciprocating said carriage again for the defective portion and driving said recording head in accordance with said density difference during the forward movement of said carriage

Additionally, independent claims 7 and 8 are patentable for similar reasons discussed above with respect to claim 1, and claims 9, 10, 29, 30, and 37 are patentable by virtue of their dependency.

In view of above, claims 7 and 8 are not anticipated or rendered obvious by the individual or combined teachings of Suzuki and Noyes. Therefore, the 35 U.S.C. 103 rejection of claims 7-10, 29, 30, and 37 should be withdrawn.

E. Claims 13-15 stand rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Suzuki et al. Patent 6,547,361 as applied to claim 11 above, and further in view of Tanaka et al. Patent 6,123,341.

With respect to claims 13-15, the Examiner recognizes that Suzuki fails to disclose measuring the density of a test pattern, and therefore, attempts to combine the teachings of Suzuki and Tanaka. He maintains that, at the time of the invention, it would have obvious to a person of ordinary skill in the art to measure density in a test print and the motivation for doing so would have been to verify that all nozzles in a print jet are functioning correctly.

However, Suzuki and Tanaka determine defective or clogged nozzles in two different ways. First, Suzuki determines a malfunctioning nozzle using the monitoring unit (CCD) at the time of printing the image, and does not (and would not) require a test pattern as disclosed in Tanaka. Suzuki is complete in itself for determining that *all nozzles in a print jet are functioning correctly*.

Second, because print defects in Suzuki can be temporary, Suzuki would not require a test pattern that may no longer accurately represent a clogged or partially clogged nozzle after the ejection recovery process, described in col. 21, lines 40-54, has been performed. The system Suzuki recognizes that a previously clogged or obstructed nozzle is now working properly after the ejection recovery process has cleared the fluff, ink, or dust that was obstructing the flow of ink. This type of correction is common. Therefore, modifying Suzuki to include a test pattern is of no use, and worse, may cause an obstructed nozzle to be mistakenly considered as a broken nozzle that needs to be replaced.

Third, building on the previous point, it is common that print defects are caused by ink mist. When the CCD recognizes a print defect, it is possible to lower the driving frequency of

the recording head to clear up this problem (col. 17, lines 66-67 and col. 18, lines 1-10), which augments the point that there is no need for a test pattern as described in Tanaka.

Last, the test pattern in Tanaka is for *serial printing* where a long white streak would be noticed among the dots if a nozzle is defective, as seen in Fig. 3 of Tanaka. Using multi-scanning as described in Suzuki, this type of type of white streak would be avoided, and thus, there is no use for the test pattern of Tanaka.

For at least the foregoing reasons, there is no motivation to combine the teachings of Suzuki and Tanaka in the manner described by the Examiner, and one skilled in the art would not.

Further, claims 13-15 are patentable by virtue of their dependency from claim 11. Tanaka does not compensate for the deficiencies of Suzuki.

In view of above, claims 13-15 are not anticipated or rendered obvious by the individual or combined teachings of Suzuki and Tanaka. Therefore, the 35 U.S.C. 103 rejection of claims 13-15 should be withdrawn.

F. Claims 16-21, 28, and 32 stand rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Suzuki et al. Patent 6,547,361, and further in view of Schantz Patent 5,124,720.

With respect to claims 16 and 19, the Examiner concedes that Suzuki fails to teach or suggest moving said recording medium successively in accordance with a number of normal recording elements. The Examiner maintains that, as of the teaching of Schantz, it would have obvious to a person of ordinary skill in the art to move a recording medium successively

according to the number of working recording elements, because the motivation for doing so would have been to improve the speed of printing utilizing only working printing elements.

A drawback of multi-scanning is that it increases the time required for printing because printing is done by, for example, three portions (X, Y, and Z). Each portion prints different columns along the same rows (Figs. 3A and 3B of Suzuki). There mere fact that multi-scanning is used dictates that moving said recording medium successively in accordance with a number of normal recording elements would tremendously decrease the speed of printing. Each portion (X, Y, and Z) is set up to compensate for the defective nozzles in any individual portion. According to the Examiner modification of Suzuki, if (for example) portion X has 4 nozzles and the 3rd nozzle is defective, then the X portion would only record with its 1st and 2nd nozzles and the paper would be moved accordingly. Although, portions Y and Z have their 1st - 4th nozzles fully functioning, they would not be able to benefit from their full printing capability because the paper would be moved only for 2 nozzles. Considering the decrease in speed due to the multi-scanning process, moving the paper by only 2 nozzles would reduce the speed of printing enormously, and such a printing scheme would be unfeasible. Multi-scanning ***itself*** as disclosed in Suzuki already compensates for a defective nozzle, and there would be no need to further slow down printing by adding the substitution process taught in Schantz.

Further, with respect to claims 16 and 19, Suzuki fails to teach or suggest a failure judging means for judging the row as the defective row when said measured density is less than a prescribed value, said failure judging means judging the corresponding recording element as the broken recording element. As previously discussed, multi-scanning would not have a white

streak because portions X, Y, and Z individually print different columns along the same row. Accordingly, Suzuki fails to teach or suggest a failure judging means for judging the row as the defective row when said measured density is less than a prescribed value, because no row would be judged. Even assuming, *arguendo*, that an arbitrary failure judging means for judging the row as the defective row were added to Suzuki, there is no motivation for making such a modification to Suzuki because it is not needed. Suzuki is concerned with monitoring whether the ink ejected from a nozzle of an individual portion (X, Y, or Z) is defective. The mere fact that multi-scanning is used, makes it very unlikely that an entire row of ejected ink would ever be defective for an arbitrary failure judging means to judge. For such to occur, portions X, Y, and Z must each have a defective (clogged) nozzle at the very same respective location on portions X, Y, and Z of the recording head.

For at least the foregoing reasons, there is no motivation to combine Suzuki and Schantz in the manner suggest by the Examiner, and even if combined claims 16 and 19 are not rendered unpatentable.

As discussed above, Suzuki is deficient vis-à-vis claim 1. Schantz does not compensate for the deficiencies of Suzuki. Therefore, claim 28 is patentable by virtue of its dependency from claim 1.

In view of above, the individual or combined teachings of Suzuki and Schantz do not anticipate or render obvious the features of claims 16 and 19. Therefore, the 35 U.S.C. 103 rejection of claims 16-19, 20, 21, 28, and 32 should be withdrawn.

G. Claims 22, 23, and 34 stand rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Suzuki et al. Patent 6,547,361, and further in view of Yamaguchi et al. Patent 5,424,764.

Claim 22 recites:

> A serial printing method for recording an image on a recording material one line by one line, said line including one or more rows and said line being recorded by moving a recording head of a printer in a width direction of said recording material, said serial printing method comprising the steps of:
> discharging a sheet of said recording material on which said image has been recorded, from said printer;
> setting said discharged sheet of recording material to said printer again;
> detecting whether or not a print defect occurs on said recorded row; and
> performing correction recording relative to said row on which said print defect occurs, on said sheet of the recording material.

The Examiner concedes that Suzuki does not disclose discharging a recording material and rerecording on the discharged recording material. The Examiner maintains that Yamaguchi discloses discharging a recording material on which said image has been recorded, from said printer and setting said discharged recording material to said printer again. The Examiner attempts to compensate for the deficiencies of Suzuki by applying Yamaguchi in a vacuum.

Yamaguchi provides a system for erasing and rewriting on thermal sensitive paper to easily reuse thermal sensitive paper. By applying heat, thermal sensitive paper can be transparent for erasing or cloudy for printing. Yamaguchi provides a system for controlling a thermal recording head to erase or write on thermal sensitive paper; so, therefore, instead of discarding the paper, it can be reused again and again. This idea of reusing the same paper in the

printer in Yamaguchi does not teach or suggest [1] discharging **a sheet** of said recording material on which said image has been recorded, from said printer, [3] setting said discharged **sheet** of recording material to said printer again, and [2] performing correction recording relative to said row on which said print defect occurs, on said **sheet** of the recording material.

Even combining the teachings of Suzuki and Yamaguchi as suggested by the Examiner, the combined teachings fail to take into account (and disclose the relationship) that the same discharged sheet from the printer has a print defect, the print defect has been detected on the discharged sheet, the same discharged sheet is set to the printer again, and the same discharged has correction recording performed on it to correct the print defect.

The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. (MPEP 2143.01) Indeed, there is no suggestion to combine the two references in the manner suggested by the Examiner, and even if combined they fail to teach or suggest the features of claim 22.

For at least the foregoing reasons, claim 22 is not anticipated or rendered obvious by the individual or combined teachings of Suzuki and Yamaguchi. Therefore, the 35 U.S.C. 103 rejection of claims 22, 23, and 34 should be withdrawn.

H. Claims 24 and 35 stand rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Suzuki et al. Patent 6,547,361, and further in view of Ui et al. Patent 6,340,984.

Independent claim 24 is patentable for similar reasons discussed above with respect to claim 1, and claim 35 is patentable by virtue of its dependency from claim 35. Ui does not compensate for the deficiencies of Suzuki.

For at least the foregoing reasons, claims 24 and 35 are not anticipated or rendered obvious by the individual or combined teachings of Suzuki and Ui. Therefore, the 35 U.S.C. 103 rejection of claims 24 and 35 should be withdrawn.

I. Claims 25 and 26 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. Patent 6,547,361 and Ui et al. Patent 6,340,984 as applied to claim 24 above, and further in view of Noyes et al. Patent 6,297,888.

As discussed above, Suzuki and Ui are deficient vis-à-vis claim 24. Noyes does not compensate for the deficiencies of Suzuki and Ui. Therefore, claims 25 and 26 are not anticipated or rendered obvious by the individual or combined teachings of Suzuki and Ui, and the 35 U.S.C. 103 rejection should be withdrawn.

J. Claim 33 stands rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Suzuki et al. and Schantz Patent 5,124,720 as applied to claim 20 above, and further in view of applicant's admitted prior art.

As discussed above, the combined teachings of Suzuki and Schantz are deficient vis-à-vis claim 19. Therefore, claim 33 is patentable by virtue of its dependency from claim 19, and the 35 U.S.C. 103 rejection should be withdrawn.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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